

RECEIVED
CENTRAL FAX CENTER

AUG 21 2007

IN THE CLAIMS

1-2. (cancelled)

3. (currently amended) A fusion implant for insertion between opposing bony structures in load bearing arrangement, the implant comprising:

a body having first and second pieces of bone assembled together to form a construct having exterior surfaces, said first and second pieces of bone not contacting each other and bordering an empty space between them; and

at least one pin projecting into the first and second body pieces to hold them together, the pin having a first end and a second end, a portion of the pin tapering between the first and second ends, wherein the pin extends from a first exterior surface partway toward a second exterior surface such that the pin is exposed at the first surface and stops short of the second surface.

4. (previously presented) The implant of claim 3 wherein the tapered portion of the pin tapers away from a first exterior surface toward a second exterior surface such that the pin has a larger portion that is near the first exterior surface and a smaller portion that is near the second exterior surface.

5. (original) The implant of claim 4 further comprising a second pin with a second tapered portion, the second tapered portion tapering away from the second exterior surface toward the first exterior surface such that the second pin has a larger portion that is near the second exterior surface and a smaller portion that is near the first exterior surface.

AMENDMENT AND RESPONSE TO OFFICE ACTION

Serial No. 10/669,779

Attorney Docket No. 4002-3423/PC890.00:CAB:#48439

Page 2 of 15

6. (original) The implant of claim 5 wherein each pin further has a longitudinal axis and a diameter associated with its larger end, the axes of the pins crossing one another within the body at a distance between the axes that is less than one-half the sum of the diameters of the larger ends of the pins such that one pin passes through the envelope of the other.

7. (cancelled)

8. (currently amended) A fusion implant for insertion between opposing bony structures in load bearing arrangement, the implant comprising:

a body having first and second pieces of bone, said first piece of bone having an upper surface, a lower surface, an inner surface and an outer surface, said first piece of bone having first and second holes extending through said inner and outer surfaces of said first piece of bone, said first and second holes being oblique to said upper, lower, inner and outer surfaces of said first piece of bone, said second piece of bone having an upper surface, a lower surface, an inner surface and an outer surface, said second piece of bone having third and fourth holes extending through said inner surface of said second piece of bone toward but not through said outer surface of said second piece of bone, said third and fourth holes being oblique to said upper, lower, inner and outer surfaces of said second piece of bone, wherein said inner surfaces of said first and second pieces of bone face each other, and wherein said first hole and said third hole are collinear and said second hole and said fourth hole are collinear; assembled together to form a construct having exterior surfaces; and

at least one a linear first pin projecting into the joining said first and second body bone pieces to hold them together, said first pin having a longitudinal axis and occupying at least some

AMENDMENT AND RESPONSE TO OFFICE ACTION

Serial No. 10/669,779

Attorney Docket No. 4002-3423/PC890.00:CAB:#48439

Page 3 of 15

of said first hole and substantially all of said third hole, the pin having a first end and a second end, a portion of the pin tapering between the first and second ends, wherein the pin is embedded within the body, such that it is surrounded on all sides by the body.

a linear second pin joining said first and second bone pieces, said second pin having a longitudinal axis and occupying at least some of said second hole and substantially all of said fourth hole.

wherein said pins do not contact each other, and said longitudinal axes are non-coplanar.

9. (withdrawn) The implant of claim 1 wherein the body further comprises a third piece of bone positioned between the first and second pieces, the first and second pieces comprising bone having a first load bearing capacity and the third piece comprising bone having a second load bearing capacity, the pin extending into each of the pieces to hold the construct together.

10. (withdrawn) The implant of claim 1 wherein the body further comprises a third piece of bone sandwiched between the first and second pieces, the first and second pieces comprising relatively dense bone and the third piece comprising relatively porous bone, the pin extending into each of the pieces to hold the construct together.

11. (withdrawn) The implant of claim 10 wherein the first and second pieces comprise cortical bone and the third piece comprises cancellous bone.

12. (withdrawn) The implant of claim 11 wherein the pin comprises cortical bone.

AMENDMENT AND RESPONSE TO OFFICE ACTION

Serial No. 10/669,779

Attorney Docket No. 4002-3423/PC890.00:CAB:#48439

Page 4 of 15

13. (withdrawn) The implant of claim 10 wherein the exterior surfaces include opposing sides for contacting the adjacent bony structures, the first, second, and third pieces being aligned side by side such that each piece spans the adjacent bony structures, the body further including an opening through the third piece communicating with the adjacent bony structures.

14. (withdrawn) The implant of claim 10 wherein the exterior surfaces include opposing sides for contacting the adjacent bony structures, the body further comprising a fourth piece of bone comprising relatively porous bone, the four pieces of bone being aligned side by side such that each piece spans the adjacent bony structures, the third and fourth pieces being spaced apart to form an opening through the body communicating with the adjacent bony structures.

15. (previously presented) The implant of claim 3 further comprising an opening through the body communicating with the adjacent bony structures.

16. (original) The implant of claim 15 further comprising a bone growth promoting substance in the opening.

17. (original) The implant of claim 16 wherein the bone growth promoting substance comprises at least one substance selected from the group consisting of bone paste, cancellous bone, bone chips, bone morphogenic protein, LJM mineralization protein, platelet derived growth factors, bone marrow aspirate, stem cells, and biologic growth factors.

AMENDMENT AND RESPONSE TO OFFICE ACTION

Serial No. 10/669,779

Attorney Docket No. 4002-3423/PC890.00:CAB:#48439

Page 5 of 15

18. (previously presented) The implant of claim 3 wherein the pin comprises at least one material selected from the group consisting of bone, metal, ceramic, carbon, bioglass, and polymers.

19-20. (cancelled)

21. (currently amended) The implant of claim 20 8 further comprising a fixation device attached to the adjacent bony structures to limit the relative motion between them.

22. (original) The implant of claim 21 wherein the fixation device substantially prevents all relative motion between the adjacent bony structures.

23. (original) The implant of claim 21 wherein the fixation device allows a predetermined amount of relative motion between the adjacent bony structures during the fusion process.

24. (original) The implant of claim 21 wherein the fixation device is selected from the group consisting of plates, internal rod systems, external rod systems, cable systems, cerclage systems, screws, and combinations thereof.

25-28. (cancelled)

29. (currently amended) The implant of claim 28 8 further comprising a fixation device attached to the adjacent bony structures to limit the relative motion between them.

AMENDMENT AND RESPONSE TO OFFICE ACTION

Serial No. 10/669,779

Attorney Docket No. 4002-3423/PC890.00:CAB:#48439

Page 6 of 15

30. (cancelled)

31. (withdrawn) A fusion implant for insertion between opposing bony structures in load bearing arrangement, the implant comprising:

a body having first, second, and third pieces of bone assembled together, the pieces being aligned side-by-side with the second piece of bone positioned between the first and third pieces of bone such that each piece spans the adjacent bone structures, the body including an opening through the third piece communicating with the adjacent bony structures.

32. (withdrawn) The implant of claim 31 further comprising a fusion promoting substance.

33. (withdrawn) The implant of claim 31 further comprising a fixation device attached to the adjacent bony structures to limit the relative motion between them.

34. (withdrawn) A fusion implant for insertion between opposing bony structures in load bearing arrangement, the implant comprising:

a body having first, second, third and fourth pieces of bone assembled together, the pieces being aligned side-by-side with the second and third pieces of bone positioned between the first and fourth pieces of bone such that each piece spans the adjacent bony structures, the second and third pieces being spaced apart to

AMENDMENT AND RESPONSE TO OFFICE ACTION

Serial No. 10/669,779

Attorney Docket No. 4002-3423/PC890.00:CAB:#48439

Page 7 of 15

form an opening through the body communicating with the adjacent bony structures.

35-42. (cancelled)

43. (new) An orthopedic medical implant, comprising:

a first cortical bone block having an external side, an internal side, a top and a bottom;
a second cortical bone block having an external side, an internal side, a top, and a bottom,
said second cortical bone block being physically separate from said first cortical bone block;
a first pin through said first cortical bone block and said second cortical bone block;
a second pin through said first cortical bone block and said second cortical bone block;
wherein said pins are non-coplanar with each other, said first pin having a first end adjacent the top of said first cortical bone block and a second end adjacent the bottom of said second cortical bone block, and said second pin having a first end adjacent the bottom of said first cortical bone block and a second end adjacent the top of said second cortical bone block.

44. (new) The implant of claim 43, wherein said pins do not contact each other.

45. (new) The implant of claim 43, wherein said bone blocks do not contact each other.

46. (new) The implant of claim 43, wherein said first cortical bone block further includes two opposed lateral side surfaces, and said second cortical bone block further includes two opposed lateral side surfaces, and said pins are oblique to said external side, internal side, top, bottom,

AMENDMENT AND RESPONSE TO OFFICE ACTION

Serial No. 10/669,779

Attorney Docket No. 4002-3423/PC890.00:CAB:#48439

Page 8 of 15

and lateral sides of said first cortical bone block, and said pins are oblique to said external side, internal side, top, bottom, and lateral sides of said second cortical bone block.

47. (new) The implant of claim 8, wherein said pins do not contact each other.

48. (new) The implant of claim 8, wherein said bone blocks do not contact each other.

AMENDMENT AND RESPONSE TO OFFICE ACTION

Serial No. 10/669,779

Attorney Docket No. 4002-3423/PC890.00:CAB:#48439

Page 9 of 15